



# BioMap and Living Waters

## Guiding Land Conservation for Biodiversity in Massachusetts

### Core Habitats of West Springfield

This report and associated map provide information about important sites for biodiversity conservation in your area.

This information is intended for conservation planning, and is not intended for use in state regulations.

Produced by:  
**Natural Heritage & Endangered Species Program**  
**Massachusetts Division of Fisheries and Wildlife**  
**Executive Office of Environmental Affairs**  
**Commonwealth of Massachusetts**

Produced in 2004



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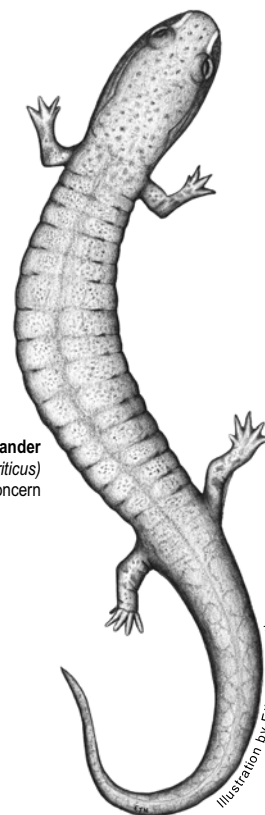
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\* Depending on the location of Core Habitats, your city or town may not have all of these sections.

**Spring Salamander**  
(*Gyrinophilus porphyriticus*)  
Species of Special Concern



*Funding for this project was made available by the Executive Office of Environmental Affairs, contributions to the Natural Heritage & Endangered Species Fund, and through the State Wildlife Grants Program of the US Fish & Wildlife Service.*



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**Massachusetts Division of Fisheries and Wildlife**  
North Drive, Westborough, MA 01581  
Tel: (508) 792-7270, Ext. 200 Fax: (508) 792-7821  
<http://www.nhesp.org>

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### Introduction

In this report, the Natural Heritage & Endangered Species Program provides you with site-specific biodiversity information for your area. Protecting our biodiversity today will help ensure the full variety of species and natural communities that comprise our native flora and fauna will persist for generations to come.

The information in this report is the result of two statewide biodiversity conservation planning projects, **BioMap** and **Living Waters**. The goal of the BioMap project, completed in 2001, was to identify and delineate the most important areas for the long-term viability of terrestrial, wetland, and estuarine elements of biodiversity in Massachusetts. The goal of the Living Waters project, completed in 2003, was to identify and delineate the rivers, streams, lakes, and ponds that are important for freshwater biodiversity in the Commonwealth. These two conservation plans are based on documented observations of rare species, natural communities, and exemplary habitats.

### What is a Core Habitat?

Both BioMap and Living Waters delineate **Core Habitats** that identify the most critical sites for biodiversity conservation across the state. Core Habitats represent habitat for the state's most viable rare plant and animal populations and include exemplary natural communities and aquatic habitats. Core Habitats represent a wide diversity of rare species and natural communities (see Table 1), and these areas are also thought to contain virtually all of the other described species in Massachusetts. Statewide, BioMap Core Habitats encompass 1,380,000 acres of uplands and wetlands, and Living Waters identifies 429 Core Habitats in rivers, streams, lakes, and ponds.



### Core Habitats and Land Conservation

One of the most effective ways to protect biodiversity for future generations is to protect Core Habitats from adverse human impacts through land conservation. For Living Waters Core Habitats, protection efforts should focus on the **riparian areas**, the areas of land adjacent to water bodies. A naturally vegetated buffer that extends 330 feet (100 meters) from the water's edge helps to maintain cooler water temperature and to maintain the nutrients, energy, and natural flow of water needed by freshwater species.

### In Support of Core Habitats

To further ensure the protection of Core Habitats and Massachusetts' biodiversity in the long-term, the BioMap and Living Waters projects identify two additional areas that help support Core Habitats.

In BioMap, areas shown as **Supporting Natural Landscape** provide buffers around the Core Habitats, connectivity between Core Habitats, sufficient space for ecosystems to function, and contiguous undeveloped habitat for common species. Supporting Natural Landscape was



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generated using a Geographic Information Systems (GIS) model, and its exact boundaries are less important than the general areas that it identifies. Supporting Natural Landscape represents potential land protection priorities once Core Habitat protection has been addressed.

In Living Waters, *Critical Supporting Watersheds* highlight the immediate portion of the watershed that sustains, or possibly degrades, each freshwater Core Habitat. These areas were also identified using a GIS model. Critical Supporting Watersheds represent developed and undeveloped lands, and can be quite large. Critical Supporting Watersheds can be helpful in land-use planning, and while they are not shown on these maps, they can be viewed in the Living Waters report or downloaded from [www.mass.gov/mgis](http://www.mass.gov/mgis).

## Understanding Core Habitat Species, Community, and Habitat Lists

### What's in the List?

Included in this report is a list of the species, natural communities, and/or aquatic habitats for each Core Habitat in your city or town. The lists are organized by Core Habitat number.

For the larger Core Habitats that span more than one town, the species and community lists refer to the entire Core Habitat, not just the portion that falls within your city or town. For a list of all the state-listed rare species within your city or town's boundary, whether or not they are in Core Habitat, please see the town rare species lists available at [www.nhesp.org](http://www.nhesp.org).

The list of species and communities within a Core Habitat contains only the species and

**Table 1.** The number of rare species and types of natural communities explicitly included in the BioMap and Living Waters conservation plans, relative to the total number of native species statewide.

BioMap		
Biodiversity Group	Species and Verified Natural Community Types	
	Included in BioMap	Total Statewide
Vascular Plants	246	1,538
Birds	21	221 breeding species
Reptiles	11	25
Amphibians	6	21
Mammals	4	85
Moths and Butterflies	52	An estimated 2,500 to 3,000
Damselflies and Dragonflies	25	An estimated 165
Beetles	10	An estimated 2,500 to 4,000
Natural Communities	92	> 105 community types
Living Waters		
Biodiversity Group	Species	
	Included in Living Waters	Total Statewide
Aquatic Vascular Plants	23	114
Fishes	11	57
Mussels	7	12
Aquatic Invertebrates	23	An estimated > 2500

natural communities that were explicitly included in a given BioMap or Living Waters Core Habitat. Other rare species or examples of other natural communities may fall within the Core Habitat, but for various reasons are not included in the list. For instance, there are a few rare species that are omitted from the list or summary because of their particular sensitivity to the threat of collection. Likewise, the content of many very small Core Habitats are not described in this report or list, often because they contain a single location of a rare plant



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species. Some Core Habitats were created for suites of common species, such as forest birds, which are particularly threatened by habitat fragmentation. In these cases, the individual common species are not listed.

### What does 'Status' mean?

The Division of Fisheries and Wildlife determines a status category for each rare species listed under the Massachusetts Endangered Species Act, M.G.L. c.131A, and its implementing regulations, 321 CMR 10.00. Rare species are categorized as Endangered, Threatened, or of Special Concern according to the following:

- **Endangered** species are in danger of extinction throughout all or a significant portion of their range or are in danger of extirpation from Massachusetts.
- **Threatened** species are likely to become Endangered in Massachusetts in the foreseeable future throughout all or a significant portion of their range.
- **Special Concern** species have suffered a decline that could threaten the species if allowed to continue unchecked or occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become Threatened in Massachusetts.

In addition, the Natural Heritage & Endangered Species Program maintains an unofficial **watch list** of plants that are tracked due to potential conservation interest or concern, but are not regulated under the Massachusetts Endangered Species Act or other laws or regulations. Likewise, described natural communities are not regulated any laws or regulations, but they can help to identify ecologically important areas that are worthy of protection. The status of natural

### Legal Protection of Biodiversity

BioMap and Living Waters present a powerful vision of what Massachusetts would look like with full protection of the land that supports most of our biodiversity. To create this vision, some populations of state-listed rare species were deemed more likely to survive over the long-term than others.

Regardless of their potential viability, all sites of state-listed species have full legal protection under the Massachusetts Endangered Species Act (M.G.L. c.131A) and its implementing regulations (321 CMR 10.00). Habitat of state-listed wildlife is also protected under the Wetlands Protection Act Regulations (310 CMR 10.37 and 10.59). The **Massachusetts Natural Heritage Atlas** shows **Priority Habitats**, which are used for regulation under the Massachusetts Endangered Species Act and Massachusetts Environmental Policy Act (M.G.L. c.30) and **Estimated Habitats**, which are used for regulation of rare wildlife habitat under the Wetlands Protection Act. For more information on rare species regulations, see the *Massachusetts Natural Heritage Atlas*, available from the Natural Heritage & Endangered Species Program in book and CD formats.

BioMap and Living Waters are conservation planning tools and do not, in any way, supplant the Estimated and Priority Habitat Maps which have regulatory significance. Unless and until the combined BioMap and Living Waters vision is fully realized, we must continue to protect all populations of our state-listed species and their habitats through environmental regulation.

communities reflects the documented number and acreages of each community type in the state:

- **Critically Imperiled** communities typically have 5 or fewer documented sites or have very few remaining acres in the state.
- **Imperiled** communities typically have 6-20 sites or few remaining acres in the state.
- **Vulnerable** communities typically have 21-100 sites or limited acreage across the state.
- **Secure** communities typically have over 100 sites or abundant acreage across the state; however excellent examples are identified as Core Habitat to ensure continued protection.



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### Understanding Core Habitat Summaries

Following the BioMap and Living Waters Core Habitat species and community lists, there is a descriptive summary of each Core Habitat that occurs in your city or town. This summary highlights some of the outstanding characteristics of each Core Habitat, and will help you learn more about your city or town's biodiversity. You can find out more information about many of these species and natural communities by looking at specific *fact sheets* at [www.nhesp.org](http://www.nhesp.org).

### Next Steps

BioMap and Living Waters were created in part to help cities and towns prioritize their land protection efforts. While there are many reasons to conserve land – drinking water protection, recreation, agriculture, aesthetics, and others – BioMap and Living Waters Core Habitats are especially helpful to municipalities seeking to protect the rare species, natural communities, and overall biodiversity within their boundaries. Please use this report and map along with the rare species and community fact sheets to appreciate and understand the biological treasures in your city or town.

### Protecting Larger Core Habitats

Core Habitats vary considerably in size. For example, the average BioMap Core Habitat is 800 acres, but Core Habitats can range from less than 10 acres to greater than 100,000 acres. These larger areas reflect the amount of land needed by some animal species for breeding, feeding, nesting, overwintering, and long-term survival. Protecting areas of this size can be

very challenging, and requires developing partnerships with neighboring towns.

Prioritizing the protection of certain areas within larger Core Habitats can be accomplished through further consultation with Natural Heritage Program biologists, and through additional field research to identify the most important areas of the Core Habitat.

### Additional Information

If you have any questions about this report, or if you need help protecting land for biodiversity in your community, the Natural Heritage & Endangered Species Program staff looks forward to working with you.

Contact the Natural Heritage & Endangered Species Program:

*by Phone* 508-792-7270, Ext. 200

*by Fax:* 508-792-7821

*by Email:* [natural.heritage@state.ma.us](mailto:natural.heritage@state.ma.us).

*by Mail:* North Drive  
Westborough, MA 01581

The GIS datalayers of BioMap and Living Waters Core Habitats are available for download from MassGIS: [www.mass.gov/mgis](http://www.mass.gov/mgis)

Check out [www.nhesp.org](http://www.nhesp.org) for information on:

- Rare species in your town
- Rare species fact sheets
- BioMap and Living Waters projects
- Natural Heritage publications, including:
  - \* Field guides
  - \* Natural Heritage Atlas, and more!



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# BioMap: Species and Natural Communities

## West Springfield

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### Core Habitat BM816

#### Natural Communities

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Circumneutral Rock Cliff Community		Vulnerable
Circumneutral Rocky Summit/Rock Outcrop Community		Imperiled
Circumneutral Talus Forest/Woodland		Vulnerable
Forest Seep Community		Secure
Hemlock-Hardwood Swamp		Secure
Hickory - Hop Hornbeam Forest/Woodland		Imperiled
Level Bog		Vulnerable
Shrub Swamp		Secure

#### Plants

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Autumn Coralroot	<i>Corallorhiza odontorhiza</i>	Special Concern
Black Maple	<i>Acer nigrum</i>	Special Concern
Cornel-Leaved Aster	<i>Doellingeria infirma</i>	Endangered
Glaucous Sedge	<i>Carex glaucoidea</i>	Endangered
Green Rock-Cress	<i>Arabis missouriensis</i>	Threatened
Hairy Agrimony	<i>Agrimonia pubescens</i>	Threatened
Hoary Tick-Trefoil	<i>Desmodium canescens</i>	Watch Listed
Houghton's Flatsedge	<i>Cyperus houghtonii</i>	Endangered
Large-Bracted Tick-Trefoil	<i>Desmodium cuspidatum</i>	Threatened
Linear-Leaved Milkweed	<i>Asclepias verticillata</i>	Threatened
Narrow-Leaved Vervain	<i>Verbena simplex</i>	Endangered
New England Blazing Star	<i>Liatris scariosa</i> var. <i>novae-angliae</i>	Special Concern
Nodding Chickweed	<i>Cerastium nutans</i>	Endangered
Philadelphia Panic-Grass	<i>Panicum philadelphicum</i>	Special Concern



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# BioMap: Species and Natural Communities

## West Springfield

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Purple Clematis	<i>Clematis occidentalis</i>	Special Concern
Red Mulberry	<i>Morus rubra</i>	Endangered
Roundleaf Shadbush	<i>Amelanchier sanguinea</i>	Special Concern
Sensitive Rare Plant		
Shining Wedgegrass	<i>Sphenopholis nitida</i>	Threatened
Spiked False Oats	<i>Trisetum triflorum ssp molle</i>	Endangered
Swamp Lousewort	<i>Pedicularis lanceolata</i>	Endangered
Toothcup	<i>Rotala ramosior</i>	Endangered
Violet Wood-Sorrel	<i>Oxalis violacea</i>	Endangered
Wapato	<i>Sagittaria cuneata</i>	Threatened

### Invertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
New Jersey Tea Inchworm	<i>Apodrepanulatrix liberaria</i>	Endangered
Orange Sallow Moth	<i>Rhodoecia aurantiago</i>	Threatened
Pine Barrens Itame	<i>Itame sp. 1 near inextricata</i>	Special Concern
Pine Barrens Zanclognatha	<i>Zanclognatha martha</i>	Threatened

### Vertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Endangered
Eastern Box Turtle	<i>Terrapene carolina</i>	Special Concern
Four-toed Salamander	<i>Hemidactylium scutatum</i>	Special Concern
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	Threatened
Jefferson Salamander	<i>Ambystoma jeffersonianum</i>	Special Concern
Marbled Salamander	<i>Ambystoma opacum</i>	Threatened
Sensitive Rare Vertebrate		
Spring Salamander	<i>Gyrinophilus porphyriticus</i>	Special Concern
Upland Sandpiper	<i>Bartramia longicauda</i>	Endangered
Wood Turtle	<i>Clemmys insculpta</i>	Special Concern



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# BioMap: Species and Natural Communities

## West Springfield

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### Core Habitat BM965

#### Natural Communities

Common Name

Scientific Name

Status

Major-River Floodplain Forest

Imperiled

#### Vertebrates

Common Name

Scientific Name

Status

Bald Eagle

*Haliaeetus leucocephalus*

Endangered

### Core Habitat BM1018

#### Plants

Common Name

Scientific Name

Status

Small Site for Rare Plant

### Core Habitat BM1040

#### Plants

Common Name

Scientific Name

Status

Small Site for Rare Plant

### Core Habitat BM1083

#### Plants

Common Name

Scientific Name

Status

Small Site for Rare Plant

### Core Habitat BM1086

#### Plants

Common Name

Scientific Name

Status

Small Site for Rare Plant



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# BioMap: Species and Natural Communities

## West Springfield

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### Core Habitat BM1089

#### Plants

Common Name

Scientific Name

Status

Small Site for Rare Plant

### Core Habitat BM1097

#### Plants

Common Name

Scientific Name

Status

Small Site for Rare Plant

### Core Habitat BM1101

#### Plants

Common Name

Scientific Name

Status

Small Site for Rare Plant

### Core Habitat BM1102

#### Plants

Common Name

Scientific Name

Status

Small Site for Rare Plant

### Core Habitat BM1107

#### Plants

Common Name

Scientific Name

Status

Small Site for Rare Plant



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# BioMap: Core Habitat Summaries

## West Springfield

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### Core Habitat BM816

This long Core Habitat encompasses critical habitat for a diversity of rare plants and animals. It includes the ridgeline and adjacent slopes of East Mountain and Mount Tom, as well as the cultural grasslands at Barnes Municipal Airport. Together these diverse habitats support a number of outstanding rare plant populations, in addition to several rare species of moths, amphibians, reptiles, and grassland birds. Also of note are the many high-quality natural communities, such as the largest-known Circumneutral Talus Forest in the state. Although much of the area within this Core Habitat is already protected as conservation land, other large and important sections remain unprotected.

#### Natural Communities

This long Core Habitat contains multiple species-rich, high-quality natural communities of rocky East Mountain and Mount Tom. It includes the largest-known Circumneutral Talus Forest in the state. Circumneutral Talus Forest communities develop on boulder strewn slopes below certain cliffs, with scattered trees, shrubs, vines, and ferns. There is often a gradient of vegetation density as the slope changes, with more trees on the lower slope. The high-quality talus forest here has variations in slope, rock size, exposure, and light, and consequently supports a great diversity of plant associations. Also contained within this Core Habitat is a large Hickory-Hop Hornbeam Forest/Woodland of excellent quality that is associated with many state-listed rare species. Hickory-Hop Hornbeam Forests are open, mixed hardwood forests dominated by various Hickory species and with significant Hop Hornbeam in the subcanopy. This community type is characterized by a sparse shrub layer, and a rich diversity of herbaceous flora. Also of note within this Core Habitat are: several high-quality Circumneutral Rocky Summit/Rock Outcrop communities associated with hilltops, a very high-quality Level Bog found just west of the ridge in Westfield, and other wetlands that occupy depressions in and between the mountains.

#### Plants

A tremendous concentration of rare plant species is growing within this very important Core Habitat. Some of the noteworthy rare plant populations within this area include a fine stand of Black Maple, the state's largest occurrence of Cornel-Leaved Aster, several high-quality occurrences of Green Rock-Cress, and two outstanding populations of Purple Clematis.

#### Invertebrates

This Core Habitat includes two main areas, both of which are important habitat for rare moths and butterflies. The first area is the late-successional pine barrens and early-successional pine-oak woodland in Westfield, located immediately to the east of the Barnes Airport runway. The second area, which is larger and less fragmented, consists of the dry, open woodlands along the ridgetops of East Mountain and the Mount Tom Range. Rare species of moths inhabiting these areas include the New Jersey Tea Inchworm, which requires the New Jersey Tea plant growing in these habitats, and the Orange Sallow moth, whose larvae feed on False Foxgloves growing along the ridgetops. This Core Habitat is in close enough proximity to similar Core Habitat in South Hadley and Hadley to allow for occasional dispersal of Orange Sallow moths and other rare insects between these two areas.



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# BioMap: Core Habitat Summaries

## West Springfield

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### Vertebrates

This Core Habitat encompasses an elongate area that includes the entire ridgeline and adjacent slopes of East Mountain and Mount Tom in Holyoke and Easthampton. This area provides habitat for several species of state-protected rare amphibians and reptiles, including Marbled, Jefferson, Four-toed, and Spring Salamanders, as well as Eastern Box Turtles. It is characterized by rocky forested hillsides, talus slopes, seasonal pools, forested wetlands with sphagnum pools, and small brooks. It also provides breeding habitat for a variety of forest birds and important migration habitat along the north-south migration corridor of the Connecticut River Valley.

Grasslands at Barnes Municipal Airport within this Core Habitat support small breeding populations of Grasshopper Sparrows and Upland Sandpipers. Airfield management that minimizes mowing between May 1 and July 31 each year will minimize direct mortality of eggs and young of these species, while maintaining taller grass that discourages use by larger birds that pose hazards to aircraft, for example crows, geese, and gulls.

### Core Habitat BM965

#### Natural Communities

This Core Habitat contains an example of what was once a widespread natural community along the banks of the Connecticut River. This Major-River Floodplain Forest is of good quality, although its narrow shape is poorly buffered from the surrounding development. Major-River Floodplain Forests are dominated by Silver Maple. This community type is found along the floodplains of large rivers. The soils here are enriched with nutrients brought by annual floods, resulting in a diversity of plants and insects.

### Vertebrates

This Core Habitat encompasses approximately two miles of the Connecticut River and a half mile of wooded shoreline in West Springfield that provide feeding and perching habitat for wintering and non-breeding Bald Eagles.



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# Living Waters: Species and Habitats

## West Springfield

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### Core Habitat LW361

#### Invertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Creeper	<i>Strophitus undulatus</i>	Special Concern
Triangle Floater	<i>Alasmidonta undulata</i>	Special Concern

### Core Habitat LW428

#### Invertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Triangle Floater	<i>Alasmidonta undulata</i>	Special Concern
Yellow Lampmussel	<i>Lampsilis cariosa</i>	Endangered

#### Fishes

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Burbot	<i>Lota lota</i>	Special Concern
Shortnose Sturgeon	<i>Acipenser brevirostrum</i>	Endangered



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# Living Waters: Core Habitat Summaries

## West Springfield

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### Core Habitat LW361

The Westfield River supports six out of the state's twelve freshwater mussel species, including robust and reproducing populations of the rare Triangle Floater and the rare Creeper mussel. These mussels get a foothold in the sands and gravels that build up in the numerous impoundments, pools, and bars that break up this otherwise quick flowing, hard bottomed river.

### Core Habitat LW428

The Connecticut River provides unparalleled freshwater habitats for fishes and invertebrates in Massachusetts. This Core Habitat extends south from the Holyoke dam to the state boundary.

The Connecticut River is of conservation significance because it supports the only known occurrence of the Endangered Yellow Lampmussel in Massachusetts. This freshwater mussel lives in large rivers, and was recently rediscovered in the mainstem of the Connecticut River at depths of up to fifteen feet. In the past, the Connecticut River was known to support eleven mussel species, and today there are nine species known from the river.

Of further importance is the tremendous habitat value of the Connecticut River for the state- and federally-Endangered Shortnose Sturgeon. The stretch of the Connecticut River downstream of the Holyoke dam near the intersection of the South Hadley, Chicopee, and Holyoke town lines is a spawning (breeding) and overwintering area for this long-lived, prehistoric-looking fish. This species is particularly susceptible to habitat degradation and mortality because it does not reach reproductive maturity until it is at least 5 - 10 years old. The section of the Connecticut River bordering the towns of Agawam, Longmeadow, and the southern portion of Springfield is also an important habitat for Shortnose Sturgeon. This species use the area after spawning, during the winter, and as summer feeding grounds. Managing water flow from the upstream dam, as well as stormwater runoff from residential areas and roads will help to protect this key habitat.

The Connecticut River and its tributaries in Agawam and Longmeadow are also presumed habitat for Burbot, a fish Species of Special Concern. This enigmatic fish, a freshwater member of the cod family, has only been found at a few locations in Massachusetts. Not much is known about its life history in the state, but it may live mostly in deep pools of the Connecticut River.



**Natural Heritage  
& Endangered Species  
Program**

**Massachusetts Division of Fisheries and Wildlife**  
North Drive, Westborough, MA 01581  
Tel: (508) 792-7270, Ext. 200 Fax: (508) 792-7821  
<http://www.nhesp.org>

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